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CORRECTIONS AND ADDITIONS TO PREVIOUS PAPERS.

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The lapse of time and further observation on some of the things treated of in papers previously published in the ENTOMOLOGIST, render it desirable to make some corrections and additions.

Trogoderma ornata, Vol. XV., 91, and XVI., 37.—The treatment of this pest there detailed so completely annihilated it that it has not been seen since.

Dermestes Frischii, Vol. XVI., 37.—Seems to be successfully naturalized, since it still occurs abundantly on Brigantine Beach, and last September was found at Atlantic City. Mr. Ulke has also taken it at Washington, D. C. (Ulke MS.).

D. murinus, l. c.—This species, if ever imported, is not known to have established itself. There is a form of *D. nubilus* Say, with black or partly black antennæ, and a minimum of fulvous mottling on the thorax; specimens of this kind were probably before Dr. Leconte when he described his *murinus*, Pr. Acad. Nat. Sci. VII., 108; and before Dr. Jayne when writing his "Revision of the Dermestidæ."

Blaps.—The Virginia species of *Blaps*, found very abundantly at Alexandria, is *similis* Latr., as stated by Professor Riley. Another species found in Maryland by Mr. O. Lugger, is *mucronata* Latr. The comparisons and determinations were made by Dr. Horn on his recent trip to Europe.

Ceratocampa regalis, Vol. XVI., 15, 47 and 132.—I have had several favourable opportunities to observe the mode of pupation of the gigantic larvæ of this regal moth. Where it can find ground soft enough to penetrate, it always pupates under the earth, and if at a proper depth the pupa remains there in a clay cell formed around it by its own motions till it discloses in May; but if the larva does not get deep enough the pupa works to the surface and probably does not survive. Should the larva, as is

frequently the case, find no ground soft enough to bore into, it pupates wherever it may be when the change can no longer be deferred, and this occurs mostly under some leaves. Some of these exposed pupæ when collected in April will produce moths, notwithstanding the low temperature to which they must have been subjected.

Pterostichus, Vol. XVI., 73.—I there enumerated sixteen species taken in this vicinity; four others have since been discovered, and three have been transferred from *Evarthrus*, making a total of twenty-three.

P. vinctus Lec.—This species is semi-mountainous, inhabiting under stones on the sides of steep hills where the soil is moist and friable. Though not gregarious, when found several individuals may be taken in the same vicinity. Near the city, it must soon become extinct.

P. unicolor Say.—Of this rare insect I have only taken one specimen, and Mr. W. Klages took another. It must be sought for in mountainous places.

P. lachrymosus Newm.—Occurs with *adoxus*, and in about equal numbers; without care, from their great resemblance, they may easily be confused. Their future must be the same.

P. coracinus Newm.—On the south side of the Ohio, on the rugged sides of the hills yet in a primitive state, this species occurs abundantly. Certain individuals may readily be confused, some with *stygicus* and others with *relictus*, according to the greater or less development of certain characters at the base of the thorax. It is not likely to soon become extinct.

P. tartaricus Say, for form *strenuus* Lec.—Specimens were taken in the city, in June and July, at electric lights, but it did not occur to me elsewhere.

P. patruelis Dej.—This little species inhabits a small swamp, inaccessible, except for a short time during the dry season. It is found about the roots of bunches of grass. When this swamp shall have been drained, this species will probably be extinct here, since no other primitive swamp remains in this vicinity.

P. femoralis Kirby.—Three specimens of this small species were taken once, but the habitat was not observed, though probably it is the swamp mentioned above.

P. Hamiltoni is much more widely distributed than was at first known. It occurs at a distance from the city on the sides of many of the hills in

their primitive state, and I have seen specimens from Maryland, West Virginia and Eastern Ohio.

Atenius, Vol. XVI., 189.—The species mentioned as undescribed has since been described by Dr. Horn under the name *Wenzeli*.

Epitragus arundinis, *ib.*, 190, is found abundantly in August and September, feeding on the pollen of the beech grass growing on the sandy dunes, the underground stems of which probably sustain the larvæ.

Lixus concavus, Vol. XVII., 38.—It is quite possible the bottle of cyanide of potassium, in which this beetle was placed for several days, may have contained no free hydro-cyanic acid, as the cork was airtight ; therefore this proof of the longevity of the beetle is invalid.

Ips fasciatus, *ib.*, 46.—Lately the melanotic forms have occurred here in midsummer about as frequently as the fasciated. The difference in color does not appear to be either seasonal or racial. If a locality exists where either form is alone found it is unknown to me. If *melanism* depends on cold, a latitude or altitude should be reached where there would be only dark forms, and *vice versa*. The color of such of the European forms of *Ips* as I have seen appears to be more constant than in ours. The markings on *I. 4-guttatus* Linn., which appears to be the same as our *fasciatus*, only with a perceptibly finer punctation, are very uniform in the numerous specimens I have seen, consisting of a humeral spot, trilobate in form, and two roundish ones behind the middle of the elytra, either separate or united like dumb-bells, yellowish or reddish. The suggestion of Mr. T. D. A. Cockerell, of Colorado, that humidity may be a potent factor in determining the color in variable species, seems deserving of consideration.

Macrobasis unicolor, *ib.*, 48.—A nursery of young locusts (*Robinia pseud-acacia*), growing on a stony knoll surrounded by meadows, was almost defoliated last July by swarms of this beetle. This knoll had probably been used the previous season by the grasshoppers (*Locustide*) of the meadows as the grand depository for their eggs, which were undoubtedly the food of the larvæ of these beetles ; and which, after disclosure, promptly, in their voracity, attacked the nearest *Leguminosa*. This species is usually classed in economic entomology as *noxious*, because it occasionally eats a few beans, etc. ; but it is certainly entitled to rank among the first on the list of *beneficial*, as without its friendly aid it is greatly to be feared the grasshopper would quickly become so numerous as to seriously affect agriculture.

Piazorhinus pictus, *ib.*, 105.—This variable species is fairly abundant here, and is beaten from various bushes, especially oak. In Florida it seems common.

Cicindela, *ib.*, 201.—On Brigantine Beach, N. J., *C. lepida* is sometimes found with *C. hirticollis*. When at rest it is not readily seen on the white sand—its own colour—and rarely moves till in danger of being trampled on, seemingly aware of the protective colour of the sand. A collector has stated to me that where it occurs on dark ground it is exceedingly wary and difficult to capture. With the species of the main land mentioned, occur in abundance, *C. consentanea*, *purpurea* and *punctulata*.

Danaïs archippus, *ib.*, 204 —Very few individuals were seen on Brigantine in 1887 and 1888, and no larvæ of *Anth. polyphemus*, nor of *H. io* were found, though quite abundant other years.

Clæotus aphodioides, Vol. XIX., 64.—This species has been the subject of renewed observation, and the former statement of its mode of hibernation must be re-affirmed. Mr. O. Lugger (Proc. Ent. Soc., Washington, V. I., 84) sheds light on its early stages, stating that he has frequently bred these beetles from their eggs, and has found them in all stages, *in situ*, viz., under the bark of dead trees, where they found food in the decaying material: adding, that very likely the specimens found by myself did not enter the holes to hibernate, but rather had made them to leave the place of their birth. The statement of Mr. Lugger is very interesting as to the habits of the larvæ, and it is to be hoped he may make known in greater detail the form of the eggs, larvæ and pupæ, as it is, so far as I know, the only species of the *Scarab. Laparosticti* that is recorded as being lignivorous in the larval state. With decaying wood as the breeding place of the larva, any discrepancy of observation about hibernation may be readily reconciled. Mr. Lugger's timber, under the bark, was probably rotten, and there the larvæ fed, pupated, disclosed, and the beetles hibernated. My timber, under the bark, was sound, and the bark inseparable from the wood, and there was no rotten wood for the larvæ to feed on; but the base of the tree and the subterranean roots would supply this material amply. The beetles, however, could not hibernate there, and so crawled up the tree and into any available hole; this also accounts for the mud on the elytra of many.

Saperda Fayi, Vol. XX., 6.—I have further to state that some of the

larva do not return in the spring of the second year to feed on the dead wood at the entrance of their burrows, but bore on directly up or down the centre of the limb, attaining a distance of from sixteen to twenty-four inches before pupating, in which case the beetle escapes by a round hole.

S. concolor, Vol. XX., 8.—Some of the larvæ of this species, like in *S. Fayi*, bore in the centre of the limb some distance, the beetle escaping by a round hole, which, I think, is cut by itself, as one from which a beetle was crawling appeared to have been newly made.

Dicerca prolongata, Vol. XX., 65.—The statement that this species breeds in conifers, while probably correct, requires more confirmation. It has, however, been ascertained that it breeds in some species of the *Salicaceæ*. Mr. Blanchard records its occurrence in Massachusetts, in June, on the trunks of young poplars and on poplar logs (*Populus tremuloides*). Mr. F. Bowditch took it on the same tree in the Rocky Mountains, and also on a species of willow (*Salix*); while in the mountains of Colorado, Mr. T. D. A. Cockerell took the beetle and probably its larvæ from this same poplar, when splitting it for firewood (Ent. Month. Mag., XXIV., 232).

Myrmophilous Coleoptera, Vol. XX., 161.—The following species must be added to the list:—

Biotus formicarius (Casey, Bull. Cal. Acad. Sci., II., 8).—Occurred at Los Angeles, California. "This interesting species lives in the nests of a small, pale brown ant."—Casey. *Biotus* is a new genus in CTENISTIDES. A figure of the insect accompanies the description.

Ptenidium evanescens Marsh.—This species, according to Matthews, is common in America, Europe, the Canary Islands and Madeira. F. W. Maeklin in his COLEOPT. MYRMECOPHILA FENNICA (No. 102), states that it is often taken, both mature and immature, in the nests of *Formica rufa*, as well as in other situations.

Limulodes paradoxus Matth.—This curious insect is described and figured in Ann. Lyc. Nat. Hist., N. Y., VIII., 409. It was first taken by Dr. Brendell in Florida, and subsequently by Mr. Ulke in New York and the District of Columbia, frequently in the nests of a yellow ant, which Dr. Leconte thought identical with the species with which *Ceophilus monilis* lives. My specimens are from Massachusetts.—Blanchard. Probably not rare. Trichopterygia (Matthews), 157.

Trichopteryx fascicularis Hbst.—Inhabits Europe and North Ameri-

ca, occurring sometimes with ants, but usually in the rejectamenta of stables, and seldom or never in rotten leaves, *l. c.*, 134. This species is a doubtful myrmophile.

Emphylus Americanus Lec. (Bul. U. S. Geol. Surv, Vol. V., No. 3, 513).—Mr. Schwarz took the type of the species in an ant's nest at Veta Pass, Col., at the altitude of 11,500 feet.

Soronia (Amphotis) Ulkei Lec.—Mr. Ulke says of this species:—"I have found it every year, early in spring, in the nests of a small black ant (*Cremastogaster lineolata* Say), and this year I collected them in numbers among *Formica rufa*. The only species in Europe—*Amphotis marginata* Fab., is said to be found on flowers. Erichson found them, however, abundantly in the nests of *Formica fuliginosa*."—Entoml. Amer., III., 78.

Hypocopus formicetorum Mots. (Bull. Mose., 1840).—This species, described from the Kirghis Steppes in Asia, was taken by Mr. Schwarz at Fort Garland, Colorado, in an ant's nest.—*l. cit.*, 503; Class. of the Coleop. of N. Amer., 140.

Myrmecixenis latridioides Crotch. Occurs from Washington southwards, having been introduced with green-house plants.—Class., 140, Trans. Am. Ent. Soc., IV., 363. The habits of this species have not been recorded; but, as the European species live in ants' nests and about green-houses, it is introduced here to direct attention to it as a probable myrmophile.

Euparia castanea Serv. Occurs in Florida, Alabama and Louisiana, in the nests of a small ant (Horn).—Tr., XIV., 87. To be commonly met with in the Southern States in the nests of *Solenopsis Xylini* McC., the stinging ant of the cotton fields.—Amer. Nat., XVI., 784.

Euphoria hirtipes Horn.—This species is stated to have been found in Nebraska by Mr. Lawrence Bruner in the hills of the common red ant. It occurred quite commonly, and the larvæ were found as well as the beetles.—Amer. Nat., XVI., 748. The discovery of the larvæ of this beetle is a matter of so great interest, that the absence of all further account of them is disappointing. Maeklin states that the larvæ of *Cetonia aurata*, a near ally, are so abundant in the nests of *Formica rufa* on sandy shores, that fishermen use them commonly to bait their hooks.

Cremastochilus Knochii Lec.—This species was taken in the spring in ants' nests in Colorado by T. D. A. Cockerell, Custer County (in letter).

Hymenorus rufipes Lec.—The larvæ of this beetle were found abundantly in the nests of *Formica fusca* by Messrs. Pergande and Schwarz near Washington, D. C., and the beetles bred therefrom.—Am. Nat., XVI., 748, and XVII., 1176.

H. obscurus Say.—The larvæ of this beetle were likewise found at the same place in the nests of a large yellow ant, and, from the great care bestowed on them by the ants, it was inferred they were not there by accident.—*Ib.*, XVI., 748.

Mr. F. W. Maeklin published in 1846 his COLEOPTERA MYRMECOPHILA FENNICA, enumerating 136 species. He included such as were known to live with ants habitually; such as were found with them occasionally, but usually elsewhere, and even such as occurred in the vicinity of their nests, if of unknown habits. But the scope of the present catalogue is more limited, as stated in the introduction, and would exclude a large number of those on his list, and among them probably all of the following European-American species:—

Bembidium 4-maculatum Linn.—Dr. Sahlberg took at Ylæne a single individual with *F. rufa*. This species requires no further notice.

Tachyporus brunneus Fab.—Occurred once at Urpala in the society of *F. fuliginosa*. This species is exceedingly abundant here in early spring under stones and chips; sometimes an ant's nest is found under the same stone with the beetle, but I never discovered any connection between them, except the stone.

T. scitulus Er.—Taken not rarely in the nests of *F. rufa*. I only know this species at secondhand, having obtained it from Mr. Dury, of Cincinnati. Its habits in this country have not been noted.

Tachinus pallipes Grav.—Occurred once at Urpala among *F. fuliginosa*. *Pallipes* is very common here, and is simply a scavenger beetle.

Conosoma pubescens Payk.—Found occasionally in the nests of *F. rufa*. This species is abundant here under the bark about the base of dead trees and stumps; as ants also frequently make their nests in the same place, their being often found together is to be expected, but this does not make the species a myrmophile.

Ptenidium evanescens Marsh.—This species I include in my list doubtfully.

Meligethes æneus Fab. (*Brassicæ* Scop.).—Found rarely at Kavantholm in the nests of *F. rufa* by Mannerheim. In our country this species

occurs on the Pacific slope and in the Rocky Mountains, and I am unwilling to admit it in my list without further proof.

Cyphon padi Linn.—Taken rarely in the nests of *F. rufa* at Kavantholm, Kirjola and Urpala. It is not known as a myrmophile in this country.

Otiiorhynchus maurus Gyll.—Maeklin occasionally took this species in the nests of *F. rufa* at Kirjola. In America this species is known to occur only in Greenland, and its habits are entirely unknown.

Leptura, Vol. XXI., 32.—While this article was in press, Dr. Geo. H. Horn published in the Tr. Am. Ent. Soc. a new arrangement of the *Leptura* therein named, based on an examination and study of the types in the British Museum. The form I mentioned as being undescribed turned out to be really *nana*, and now *hematites* is regarded as its varietal synonym. The typical *nana* is thus described:—"Antennæ always piceous; anterior femora and base of middle yellowish, many specimens, however, occur with brown legs, and others with parts of the hind legs yellowish." Except these two the other forms remain as before.

Erratum—Page 33, line 18, read female, instead of male.

ADDITIONS TO THE LIST OF CANADIAN COLEOPTERA.

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By frequent trips to the woods and marshes in spring, to gather and sift the moss for hibernating coleoptera, by minutely examining the debris on the shore of Lake Erie, and by the use of umbrella and sweeping net later in the season, I have added to my collection of beetles, since 1886, several hundred good species. The following list contains those of my captures that do not appear in the lists of Canadian Coleoptera.

The species marked with an * are recorded by W. Hague Harrington in his additions to Canadian Coleoptera, published in Vol. XVI., page 44 of this journal. Those distinguished by two ** are named in Prof. J. T. Bell's list of Staphylinidæ, taken at Belleville, vide Vol. XVII., page 49 of this Journal. All the others, as far as I can learn, are quite new to Canada. For convenience of reference, I attach the numbers found in Henshaw's List of North American Coleoptera.